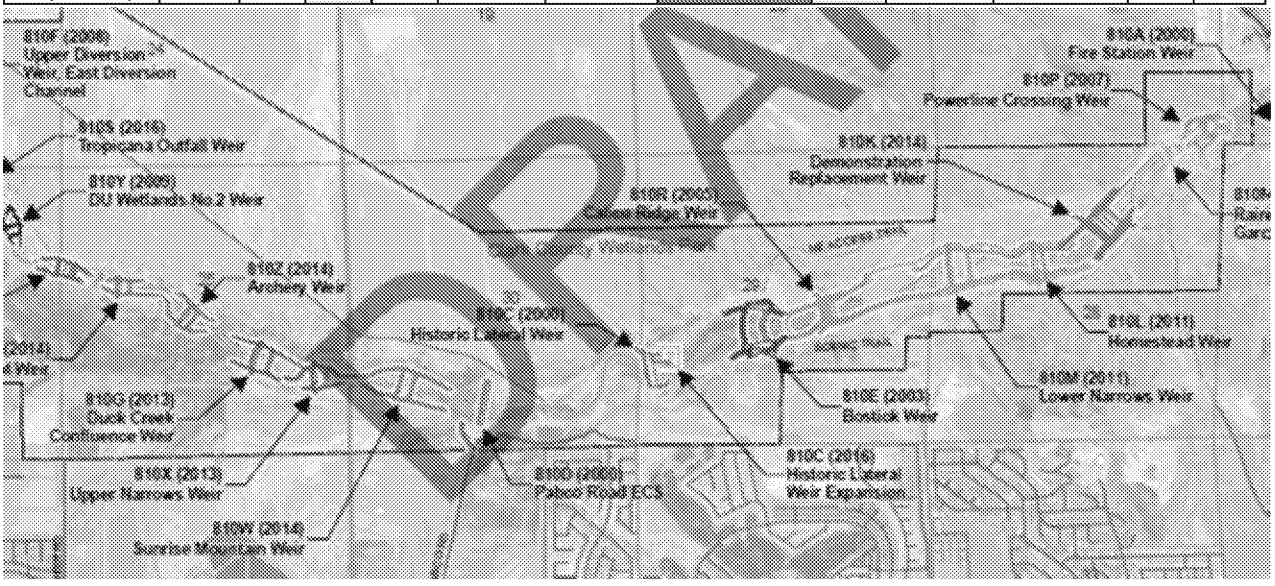
Message

From: Weiquan Dong [wdong@ndep.nv.gov]
Sent: 9/16/2016 9:01:26 PM
To: James Dotchin [jdotchin@ndep.nv.gov]; James Carlton Parker [jcarltonparker@ndep.nv.gov]; Fong, Alison [fong.alison@epa.gov]
Subject: RE: NERT EE/CA Weir Dewatering Treatment

JD,
I mostly agree with the MWD's comments. I will address two most important things about this project:

1. Dewatering flow rate. As most we knew that the 6,900 gpm dewater flow rate is unlikely because the historic maximum dewatering flow rate was 3,992 gpm excepting for the maximum flow rate of 7,077 gpm at Three Kids that was caused by the surface water flood. The Sunrise Mountain is close to Upper Narrow, so we can reasonably assume that dewatering flow rate of these two weirs are similar. The historical lateral is close to Bostic and we can also assume that the dewatering flow rate of Bostic and historical lateral is likely similar. The worst scenario is that the two weirs are dewatered at the same time and at their maximum potential flow rate of 6,445 gpm that is extremely unlikely because there was only 32% chance that the dewatering flow rate of Bostic was greater than average dewatering flow rate. More rationale dewatering flow rate for Sunrise and Historic Lateral is likely from 2,000 to 4,000 gpm. The total groundwater flux discharging to the Las Vegas Wash from the Duck Creek to Lake Las Vegas ranges from 3 to 10 cfs or 1,347 to 4,488 gpm, so the dewatering flow rate from groundwater is unlikely above 4,500 gpm. I suggest that we should work with SNWA to refine this number at our best effort because the flow rate is first and most important parameter to define this project;

Weir	DUW1	DCC	UN	Total	Sunrise	Historical Lateral	Total (Dewatering Together)	Bostic	Lower Narrow	Homestead	Total	Three Kids
Min (gpm)	193	36	97	316	97	600	697	600	0	0	197	348
Max (gpm)	484	1,355	2,453	3,730	2,453	3,992	6,445	3,992	1,808	1,501	2,800	7,077
Mean (gpm)	297	729	1,573	1,656	1,573	2,300	3,474	2,300	746	749	1,495	2,641
Days (>Mean)	25	132	86	106	86	6	92	6	53	89	117	105
Total Days	73	215	114	216	114	19	133	19	126	126	126	302
%(>Mean)	34%	61%	75%	49%	75%	32%	69%	32%	42%	71%	93%	35%



2. The FBR technology has all advantages compared to the IX technology excepting for the fact that the FBR is difficult to operate at low influent flow rate. The advantages with FBRs are: 1) It has been proved as the best cost effective technology for perchlorate. Aerojet has been using it to treat low influent perchlorate before GWETS; 2) FBR destroys perchlorate and has much less environmental footprint; 3) FBR will be likely a technology used to treat the contaminated groundwater from the area northern side Galleria Road; 4) Existing

FBRs are decade old and located at 3 more miles of the upper gradient of the most groundwater is extracted. The energy cost used to move the water from downgradient of the NERT plumes is proportional big and accumulated cost for a long term is enormous, which is against the green remediation EPA wants to see. The disadvantage having FBR for the dewatering project is only one that is difficult to operate a low influent flow rate. I thought that this can be resolved with the IX system for COP at Lift Station 1 or other ways. The IX system for COP has 1,000 gpm capacity and is only planned for using 140 gpm, which means that 860 gpm is available for the dewatering project;

3. Andy told me that the IX system budgeted in the Weir Water treatment doesn't account most of operational cost because it is just about half of the operational cost of the COP IX system. We can approximately estimate the operational cost of the Weir Water IX system based on the operational cost of the COP IX system: (4000 gpm/140 gpm)*$223,000/month=$6,371,429 or $76,457,143 for 12 months or 2000 gpm at $38,228,571 that is 4 or 8 times higher the cost of $10.88M in Table 4 estimated by Tetratech (Perchlorate estimated from SNWA dewatered water is even higher than 1.68 ppm used for the COP IX influent). If we double FBR operational cost in Table 4 estimated by TetraTech and the total cost for FBRs will be $28M+$8M=$36M. This $36M is less than lower estimation for the IX system.

In summary, as I said in the conference call, we need to work with SNWA to get the dewatering flow rate as accurate as possible or even pay their contractor for controlling dewatering rate. Once the influent flow rate is defined, NERT should do more accurate technology screening based NERT's overall remediation strategies.

Thanks,

Weiquan

NDEP

Weiquan Dong, P.E., PhD
Professional Engineer Specialist
Bureau of Industrial Site Cleanup
Phone: 702-486-2850, x252
Fax: 702-486-2863
Email: wdong@ndep.nv.gov
http://ndep.nv.gov/bmi/index.htm

From: James Dotchin
Sent: Thursday, September 15, 2016 2:51 PM
To: James Carlton Parker; Weiquan Dong; fong.alison@epa.gov
Subject: FW: NERT EE/CA Weir Dewatering Treatment

Alison, Carlton and Weiquan,

Below are some thoughts from MWD. Mainly they are wondering if there are alternative uses for the treatment system after this program is over and other options for the biological plant idea. Generally I think they fit into what we discussed yesterday. Interestingly flow rates and cost were barely brought up.
I have passed this along to Andy at NERT.
I would like to get a combined response back to MWD ahead of the Action Memo being issued from NDEP just to make them more comfortable. Please route the response through me to cut down on any miscommunication.
Thanks,

JD

James (JD) Dotchin
Chief
Bureau of Industrial Site Cleanup
Nevada Division of Environmental Protection
2030 E Flamingo Rd, Suite 230
Las Vegas, NV 89119
p: 702.486.2850 EXT 235 c: 775.443.5290 f: 702.486.2863
jdotchin@ndep.nv.gov
www.ndep.nv.gov
http://ndep.nv.gov/bmi/index.htm

From: Chaudhuri,Mickey [mailto:MChaudhuri@mwdh2o.com]
Sent: Thursday, September 15, 2016 1:48 PM
To: James Dotchin
Cc: Liang,Sun; Lopez,Maria T; Eric Fordham; Teraoka,Jill C
Subject: NERT EE/CA Weir Dewatering Treatment

Hi JD-
We discussed the EE/CA internally here-- below are our thoughts. Ultimately we'd all like to see NERT get the most value for this large capital expense and we've identified some potential options and considerations below.
Please give me a call if you'd like to discuss. I'm pretty tied up today and tomorrow in meetings so if I'm not in, just leave a message or shoot me an email and I'll get back to you. Thanks for the opportunity to provide input.
Mickey

Comments on EE/CA

- Metropolitan supports this effort to minimize additional loading of perchlorate into Las Vegas Wash by treating dewatered groundwater during the Sunrise Mountain and Historic Lateral weir construction period. Given the high capital costs for either treatment approach described in the EE/CA, we believe additional long-term uses and benefits should be considered and identified in the EE/CA to help determine the most cost-effective overall approach. The best solution for a 6- to 12-month weir dewatering period may not necessarily be the optimal solution when considering other potential uses of the treatment system, either during and/or following the weir construction period.

- Can the proposed treatment system be utilized to receive seep area flows, which could eliminate the need for the proposed GWETS IX treatment system (also constructed at Lift Station 1) intended to reduce GW-11 levels?
- Has continued operation of a treatment system as an interim measure (and potentially for a longer-term measure) been considered while development of a long-term remedy is underway?

Additional purposes for this large capital investment should be explored. Although that may seem outside the scope of this EE/CA, these other uses could potentially advise or alter the recommended treatment approach and get us the most bang for the buck.

- The EE/CA finds that biological treatment does not meet the effectiveness and implementability criteria since the biological reactors would not be effective under no-flow conditions. The solution that was evaluated involves constructing a 10-million gallon equalization tank to balance flowrates. The EE/CA indicates that the $8 million equalization tank would take over one year to construct which would make biological treatment not viable based on the weir construction schedule, as well as high capital cost. We should ensure that we've considered all options for use of biological treatment to lower the construction cost and schedule, and determine whether biological treatment or IX is the better approach, considering the significant operating costs for IX with high TDS and sulfate in the groundwater.

- Could a recirculation system or alternative design to stabilize flowrates (including use of a smaller tank) be used to eliminate the high cost and schedule prohibitive equalization tank?
- Could other downstream areas impacted by perchlorate be integrated into a biological treatment approach that (1) could provide continued flow to the treatment system when dewatering flow is at zero (eliminating need for large storage tank), and (2) have added benefit of remediating additional perchlorate impacted areas?
- Operationally, the NERT team's familiarity and experience with biological treatment at the site may be beneficial to the biological treatment option.
- For costing purposes, the EE/CA assumes spent resin from the IX would be disposed of through incineration. Do these costs consider possibility of increased hazardous waste disposal costs; could there potentially be low levels of radionuclides accumulated in the resin?

Mickey Chaudhuri
Manager, Engineering Compliance Team
Metropolitan Water District of Southern California ~ Water Quality Section
700 Moreno Ave, LaVerne, CA 91750
phone ~ 909.392.5477
email ~ mchaudhuri@mwdh2o.com
web ~ www.mwdh2o.com